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ABSTRACT

Language adequacy was coded for 403 toddlers 24 months of age who had received medical and psychological examinations in a Bilan de Sante clinic in Paris, France. The children were from three cultures: native French middle class, immigrant North African Moslem, and immigrant Black African. Demographic, socioeconomic, medical, biological, interpersonal, and family variables were systematically examined for possible correlational relationships with toddler language status, as assessed by licensed psychologists. Findings indicated that paternal education level and optimal mother-child relations, but not father-child relations, were significantly correlated with normal language development. Stress in the family, for fathers as well as mothers, regardless of culture group membership, was associated with delayed or retarded child language development. Culture group membership per se was not associated with normal or impaired language development. Thus familial variables, but not cross-cultural, medical, or demographic variables, were implicated in children's language development. Supportive and educational efforts with immigrant families may not only improve their living conditions, but may also help increase language adequacy of very young children in these families. (Author/RH)

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Family Factors Associated with Language Competence Among Toddlers in French, North African, and African Families in France

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Abstract

Language adequacy was coded for 403 toddlers, age 24 months, who had received medical and psychological examinations in a Bilan de Sante clinic in Paris, France. The children were from three cultures, a native French middle-class group and two immigrant groups: North African Moslem, and Black African.

Demographic, socioeconomic, medical/biological, interpersonal, and family variables were systematically examined for possible correlational relationships with toddler language status, as assessed by licensed psychologists. Paternal education level, optimal maternal-child relations but not father-toddler relationships were significantly correlated with normal language development. Stress in the family, for fathers as well as mothers, regardless of culture group membership, was associated with delayed or retarded child language development. Culture group membership *per se* was not associated with normal or impaired language development. Thus, not cross-cultural, nor medical, nor demographic, but familial variables were implicated in children's language development. Supportive and educational efforts with immigrant families may not only improve their living conditions but also be implicated in increased language adequacy of very young children who are reared in immigrant families.

Family Factors Associated with Language Competence Among Toddlers in French, North African, and African Families in France

A.S. Honig and K.J. Park

A wide variety of variables may affect early language development. For example, frequent and severe otitis media in the early months of life may adversely affect language competence (Klein, 1984; Paden, Novak & Beiter, 1987). Caregiver-infant relationships have also been associated with promotion or delay of language. Clarke-Stewart (1973) reported larger productive vocabularies at 17 months for toddlers whose mothers spoke and read a great deal with them and provided "optimal" intellective stimulation. Bruner (1974) has suggested theoretically that when adults adapt their speech in responsive and specialized ways to a child's earliest language efforts, then they serve to prime early language learning. Carew and colleagues (1976) observed infants and toddlers from one to three years of age in their homes. Marked differences in child competence by three years were observed and were then correlated with earlier parental interaction styles. Parents of language-competent children were more likely to have involved their children in activities of an educational nature, to have provided educational toys and books, and to have read and conversed extensively with their young children.

A question of interest in studying child development in

disparate cultures is whether parental styles differ as a function of culture group, such that language delays or adequacy can be associated with a culture group as well as with other more proximal mediators. The present paper examines medical, social, demographic, parental, and other variables in relationship to early language adequacy or delay in development among toddlers in three different culture groups.

Subjects

The subjects for the study were 148 French, 191 North African, and 64 African toddlers and their parents. The North African and African parents are first-generation immigrants to France. The North African Moslem families came from Algeria, Tunisia, and Morocco. The families' socioeconomic status (SES) measured by the Hollingshead Index(1975), ranged from low to middle class. However, all the families of the North African sample were of low SES status.

Among the French families, 36% of the parents have at least partial college education, while over 90% of the North African parents have not completed high school. In the African sample, about 30% of the parents have some college education.

Father's occupational level shows a similar trend. French and African fathers worked proportionally at professional, skilled, semi-skilled, and unskilled jobs, but most of the North African fathers were engaged in skilled, semi-skilled, and unskilled jobs, and not professional work. Only 17% of the North African mothers were working outside the home as compared to 77%

of the French mothers and 50% of the African mothers.

There were 216 boys and 187 girls in the total sample, about the same proportion of each sex in each of three culture groups (79 boys and 69 girls in the French, 101 boys and 90 girls in the North African, and 36 boys and 28 girls in the African samples).

Methods

The 403 toddlers, mean age 24 months, were given an in-depth six-hour medical examination which includes a developmental assessment and interview with the parent(s) at the Bilan de Santè at Mairie de Clichy, in the north of Paris, France.

The Bilan de Santè is a Child Health Screening System aimed at providing a comprehensive approach to child care. Its purpose is to detect any sensory, motor, social, or cognitive deficits as early as possible in preschool children. All families in Paris have access to free child examinations at one of three such Bilan de Santè sites, when the child is 10 months, 24 months and 48 months old. At the end of each check-up, 800 items have been filled and coded on each dossier. The dossiers provide details about medical items and maternal/paternal feelings for the child, the type of care (maternal, crèche, family day care, care by relatives) that the child receives, any eating or sleeping problems, how the child gets along with siblings, peers, and length of time in preschool if child is in attendance. This study focuses on data from the dossiers of 24-month-old toddlers.

The level of a child's receptive and expressive language

competence was rated as normal, delayed or retarded by the licensed psychologists who asked parents about toddler comprehension and expression and also used the Brunet-Lézine Infant Intelligence Test to assess the toddlers. The psychologists in addition based their language ratings on their observations of the toddler during an hour-long interview with the parents while the child played in the assessment room. Coding of language adequacy for this study was, for certain analyses, further simplified into two categories: adequate or delayed (whether moderate or severe).

Items from the Bilan de Santè dossiers were clustered into four domains which have potential theoretical or empirical relationships to early language development:

- ecological variables
- child adjustment status and medical variables
- family cultural variables
- and parental interpersonal variables.

Analyses of Variance (ANOVA), Chi-Square, and Pearson correlation statistics were used for the data analyses.

Results and Discussion

Correlation of Variables and Language Competence Across Culture Groups

The ecological variables examined- family size, density of persons in the household, number of facilities missing in the

home (such as running water, toilet facilities in the apartment, bathing facilities, and kitchen), type of child care, and sleeping arrangements- were not significantly related to language development. Previous analyses had indicated few correlations of these presumed family stressors with maternal report of feeling overwhelmed (debordée) in the North African family sample (Honig, Gardner & Vesin, 1987).

Child Behavior and Status Variables

Across the three culture groups, the child variables not significantly related to toddler language adequacy were: child birth order, degree of oppositionality during the second year of life, problems in feeding or in sleeping, and having a brother or sister.

Behavior problems. Child behavior problems reported by the mother did, however, significantly differentiate among toddlers whose language development was normal versus those coded as delayed or retarded in language ($\chi^2(2)=9.21$, $p=.01$, see Table 1). Where three or more minor or major child problems, such as aggression, shyness, or jealousy were recorded, then 45% of children had language deficits. This compares with 30% of children with no reported prominent behavioral problems who were recorded as having language deficits.

Insert Table 1 here

IQ difference. Toddler's IQ, which was measured by the

Brunet-Lézine infant intelligence test, was significantly related to adequacy of toddler language development ($\chi^2(2)=48.51$, $p=.000$, see Table 2). Correlation between IQ and language was substantial ($r=.41$). When the IQ scores were divided into two groups - below 99 and above 100 - and the language level into three groups - normal, delayed, and retarded, Table 2 reveals that more than half of the children (60%) whose IQ was below 99 were also language delayed or retarded, whereas only 23% of children above IQ 100 had language problems.

These relations were also evident when frequencies were computed for each nationality group separately. Table 2 reveals that overwhelmingly, for French, North African, and African toddlers, where language was coded as normal rather than delayed or retarded, then IQ was also assessed as optimal.

Insert Table 2 here

These findings may be interpreted only with difficulty, as they are analogous to the "Which came first: the chicken or the egg?" problem. A child's language proficiency can affect performance on an intelligence test, especially in the second and third year of life, when more items depend on verbal skills. On the other hand, higher IQ may indeed facilitate language development. Piagetian theory postulates that language development fundamentally reflects a child's cognitive development(1963). Although thought develops prior to and is the

grounding required for language development in Piagetian theory, once language has developed, it accelerates the development of cognitive skills. Silva, Williams, & McGee (1987) revealed that for children screened at age 3, early language delay was a strong risk predictor. The language delayed children scored lower on intelligence and reading tests and had higher scores for behavior problems not only at ages seven and eight but also at nine and eleven years of age.

Sex differences. Girls are frequently found to be more verbal and advanced in early language development than boys (See Honig, 1982 for a research review of such findings). In the present study, no sex differences were found in the overall sample($\chi^2(2)=2.4$, n.s.).

When the culture groups were examined separately, however, in Table 3, sex differences were found, with significantly more African boys than girls coded as language delayed or retarded ($\chi^2(2)=10.73$, $p=.005$). Among French toddlers, boys also were over-represented among language retarded toddlers ($\chi^2(2)=7.74$, $p=.02$). Such sex differences in early language competency may be a reflection of differences in child rearing practices. Girl babies are often held more by parents and they tend to stay near adult(s), while boys are more active and move about and away from caregivers more. Thus, girls may have more opportunities to listen and to be talked to by nearby adults - an important set of factors in language development from a social learning theory perspective. Also, cultural mores may dictate greater emphasis

on socializing girls to be obedient and compliant compared to boys. Thus, more language interactions of caregivers with girls may be focused in shaping such compliance and/or possibly subservience in some cultures.

Insert Table 3 here

Medical variables A variety of health and medical variables were coded and thus available for analysis of possible relationship with degree of normality or deficit in toddler language development. Birth weights and Apgar scores at birth were similar for the toddlers across the three culture groups and were well within the normal limits. There was a trend for birth weight ($r=.16$, $p=.05$) but not Apgar scores to be associated with delay or retardation in language. Toddlers whose birth weight was below 2500 grams were somewhat more prone to show delayed or retarded language ($\chi^2(2)=5.32, p=.07$, Holwerda-Kuiper,1987).

Across the three culture groups, blood iron measures were recorded: 20%, 10%, and 18% of all the toddlers were, respectively, low in their hemoglobin, hematocrit, and mean corpuscular volume scores, at a level considered to be below normal. No differences, however, were found for the language status of toddlers who had adequate or low blood levels on these three measures. There was a slight tendency among French toddlers, who were low in mean corpuscular volume (as a measure of iron deficit), to be more prone toward delayed or retarded

language ($\chi^2(2)=5.14$, $p=.08$), but the number of toddlers (n=13) in these two groups was too small to make definitive conclusions possible.

Infection and respiratory disease frequencies were also noted in the dossiers, since these may also be associated with hearing difficulties and possible language delays. During the first two years of life, 38% of the toddlers were free from ear/nose/throat infections, 45% had suffered from moderate ear/nose/throat infections, and 16% had had such infections frequently. For this entire group of toddlers in the three culture groups, the frequency of ear/nose/throat infections was not correlated with language adequacy status ($\chi^2(2)=0.275$, n.s.). Some researchers have indeed found that severe and frequent otitis media in the early months of an infant's life can predict later difficulties on language receptive tests such as the PPVT (Klein, 1984; Teele, Klein, Rosner, et al, 1984). Paden, Novak & Beiter (1987) revealed that along with phonologic and audiologic variables, a history of early onset and late remission from otitis media with effusion were the most important variables characterizing children who did not catch up with peers in phonologic competence by age 3.

Perhaps the gross language measure used here -optimal, delayed, or retarded language- is not sufficiently discriminating to pick up the relationship of frequent otolaryngeal infection with language deficit. Or perhaps the level of clinic care available and free to infants in French

cliniques aux nourrissons (the well baby clinics situated throughout the entire city) provides prompt and adequate care for such cases so that their sequelae are not as severe within the Parisian health system.

Family and Cultural Variables

Culture group and SES. It is noteworthy that language deficit or adequacy is not associated with any particular one of the three culture group samples studied here ($\chi^2(4)=2.07$, n.s.). Parental SES and culture group are, however, confounded in this study, since the North African children were all from lower SES families and the French children are from predominantly working class and middle class families. It is reassuring to note, that despite this confounding, no particular culture group's children were more likely to be language delayed. Such results are heartening and important for teachers working with multicultural groups of toddlers and preschoolers.

SES, measured by the four-factor Hollingshead Index, did correlate r=.13 with toddler language development across the culture groups, but did not significantly differentiate the children by language status ($\chi^2(2)=3.42$, n.s.). Thus, low SES may not be an inevitable predictor of language delay by 24 months.

In the French group (see Table 4), however, socio-economic status showed a significant correlation with language level: More language retarded youngsters were likely also to be from low SES families ($\chi^2(2)=7.92$, p=.02). Thus, conclusions that SES and

language are not related would be premature, particularly since SES variability was lacking in the North African sample, and so effects of SES could not be tested except in the French sample.

Insert Table 4 here

It must also be cautioned that other researchers have found that sometimes IQ and language differences and deficits may not show up until the third year of life. Golden, Birns, Bridger and Moss (1971) found no differences among children's Cattell IQ scores, whether the toddlers came from fatherless welfare families or working class or intact middle class families. However, a significant difference of over 20 IQ points was found when the children were tested at 36 months of age. Such IQ differences found as toddlers grow into the preschool years may largely be due to the increasingly crucial role that language plays in intellectual functioning. Enrichment programs beginning at or before two years of age may well be advisable for immigrant children. Within Paris, the first author was frequently assured by social workers that, for such reasons, they work hard to try to place immigrant toddlers into child care programs as early as possible.

Parental education. Maternal education was clearly related across all three culture groups to child language ratings ($\chi^2(4)=9.97, p=.04$). That is, Table 5 reveals that when mothers had graduated from high school or had some college, then their

toddlers had higher language ratings. Analyses were not possible within culture groups because so few of the North African mothers had graduated from high school.

Insert Table 5 here

Across the three culture groups, paternal education also showed a relationship with child language rated as normal, delayed or retarded (See Table 6). The overwhelming number (71 %) of children rated as having retarded language development were from families where the father had not graduated from high school ($\chi^2(4)=9.86$, $p=.04$). The higher the father's education, the less likely that his toddler had a language problem at two years of age. Thus, higher levels of maternal and paternal education were associated with more adequate toddler language fucntioning.

Insert Table 6 here

Maternal working status. Mother's working status, whether she was working outside the home or not, did not differentiate among children's language development as normal or retarded across the three culture groups. Father's age, mother's age, father's occupation, and type of child care - maternal, family day care, crèche, care by relatives - were also not associated with language status across any of the three culture groups studied. Within culture comparisons were difficult to carry out,

as more French mothers used other-than-mother care, whereas the majority of North African mothers cared for their own toddlers at home.

Maternal obstetrical problems. Pregnancy and obstetrical problems were noted in the dossiers and their relation to later child language status was assessed. During their pregnancy, 28% of the mothers had had some problems, and 13% had had some problems during delivery. Neither problems in pregnancy nor delivery were associated with language development status for this group of toddlers, most of whose mothers had received high level medical care in France.

Parental Interpersonal Variables

Parent stress. Previous research with the North African toddlers and their families in this research sample had revealed that there was a strong correlation of personal-social variables, such as mother-child and father-child relationship and the degree of stress (feeling overwhelmed) reported by mothers about themselves and about the fathers (Honig, Gardner & Vesin, 1987). In the present study, too, stress responses for the total sample of families were significantly related to the child's language development: 45% and 57% of toddlers, respectively, of overwhelmed mothers and fathers had language problems. However, only 24% and 28% of toddlers of mothers and fathers who felt optimal about their life situation, had problems in their language development ($\chi^2(2)=15.03$, $p=.001$ for mothers; $\chi^2(2)=9.37$, $p=.01$ for fathers. See Table 7 and Table 8).

When parental view of family stress is coded as optimal(no stress), mild distress, or overwhelmed, then patterns of relationship between parental perception of stress and toddler language status become eminently clear. As can be seen for the French, North African and African families in Table 7, when mothers felt overwhelmed, there was about a one to one chance that language status would be normal or delayed. When there was no stress in family life for the three culture groups respectively, then the chances ranged from 2 to 1, 3 to 1, to 16 to 1 that toddlers would have normal, compared to delayed or retarded, language development. Thus, it is clear from these data that how mothers felt about their life situations was significantly and importantly related to toddler language development.

Insert Table 7 here

Toddler language development was also associated with father's view of his life situation (as optimal, mild distress, or overwhelmed). As can be seen in Table 8, when fathers felt no stress, the proportions in French, North African, and African cultures, respectively, for normal to impaired language development were about 2 to 1, 3 to 1, and 4 to 1. On the other hand, when fathers were reported as feeling overwhelmed, then the proportions of children rated as normal versus impaired were about equal for the French and North African groups, and 1 to 4

in the African group.

Insert Table 8 here

Again, it is clear that parental stress versus optimal response to family functioning is strongly associated with the degree of language normality or impairment assessed in the toddlers, regardless of culture group to which the child belongs, or regardless of which sex parent is assessed.

Parent-child relationship. When mother-child relationships were examined for the three culture groups, a significant relation to toddler language status was found (see Table 9). While 24% of toddlers whose mothers had optimal relations with them developed language problems, 48% of toddlers who had a poor relationship with their mothers had language problems ($\chi^2(2)=17.89$, $p=.000$).

Insert Table 9 here

When each culture is examined separately, a significant relationship is seen for mothers and toddlers within each culture group. The proportion of normal to delayed language in the French, North African and African groups, respectively, when there was an optimal mother-child relationship was about 3 to 1, 3 to 1, and 16 to 1. But when there was a poor mother-child relationship, then the proportions, respectively, were 1 to 1 for

the first two groups, and 1 to 2 for the African group. Thus, Table 9 shows that the quality of the mother-toddler relationship was strongly related to the language status of the toddler, regardless of the culture group to which the family belonged.

Father-child relationships were not at all as strongly related to child language as were the mother-child relationships ($\chi^2(2)=3.37$, n.s. see Table 10). Among the French and North African families, no differential effect of father-child relationship on language could be found. In the African group, there did seem to be a trend such that the proportion of 3 to 1 normal to delayed language in children is reversed to 1 to 3 for children with poor father-child relationships. But the numbers are simply too small in the African group for much to be made of this finding. In general, then, there does seem to be a strong association between maternal-child relation and toddler language status, but no such relationship for fathers and children.

Insert Table 10 here

Interactive Parental Variables: Relation to Language Status

In a longitudinal research of low income families over 8 years, Beckwith (1986) showed that interaction between mother-responsiveness to child and maternal educational level is more important than each variable examined by itself.

Thus, for further analysis for all the toddlers, we combined these two variables and calculated the mean language scores in

each cell. Normal language development was scored as 3, delayed language as 2, and retarded language was scored as 1. How are parental responsiveness and education in combination related to toddler's language developmental level? As can be seen in Tables 11 and 12, children whose parents had graduated from high school (at least) and whose relationships with parents were optimal had the highest language score, M=2.63 for mothers and fathers. For mother-toddler relationship and mother's education, the overall differences in mean language scores was significant by a 2-way ANOVA (F=7.49,p=.000). There was a significant main effect of mother-toddler relationship (F=9.58, p=.000)· In addition, mean language scores of toddlers who had optimal relationship with mothers was significantly different from mean scores of toddlers whose relationship with their mothers was neutral or poor, at p=.05 level by Scheffé post-hoc analysis test.

Insert Table 11 here

It is worthwhile to note that a child whose mother did not graduate from high school, but had an optimal relationship with her toddler had a higher language score (M=2.56) than toddlers whose mothers graduated from high school but had only a neutral relationship with their toddlers (M=2.39, see Table 11). Adequacy of toddler language development was more vulnerable (in this sample from three culture groups) to maternal positive responsiveness than to maternal high school degree.

In the case of fathers, a two way ANOVA showed that there was a significant difference in mean language scores as a function of father-toddler relationship and father's education considered jointly (F=3.14, p=.03). A significant effect of father's education alone (F=5.53, p=.02) was found, however. The higher a father's education was, the higher was the child's language score(see Table 12).

Insert Table 12 here

Parents' feelings toward their life situation, in conjunction with education level attained, showed the same pattern to toddler language as did the parent-toddler relationship. Toddler's language score was highest when mother and father had graduated from high school at least and also had an optimistic outlook about their life situation. Mean language scores were M=2.63, and 2.64, respectively considering mother and father.

Furthermore, mean language scores for children whose mother did not graduate high school, but had no stress (M=2.55), were higher than children's language scores when mothers had graduated from high school, but were stressed (whether mild or overwhelmed) about family functioning (M=2.38 and M=2.25, respectively, see Table 13).

Insert Table 13 here

Mean language scores for children whose fathers had graduated from high school were higher than scores of their counterparts, whose fathers had not graduated from high school, except when the father was mildly stressed or overwhelmed (see Table 14). Thus, father's graduation from high school seems to be more influential on toddler language than his relationship with the toddler or his feeling toward family life situation, unless the relationship is poor.

Insert Table 14 here

"In measuring aspects of the environment which correlate with the growth of intelligence and academic achievement, Wolf(1964) and Davè(1963) have made a distinction between status and process variables. Status variables are demographic such as income and educational level. Process variables relate to intellectual expectations of parents for a child and amount of intellectual facilitation provided. Wolf has related family process variables to child intelligence and Davè has related the process variables to achievement. They found multiple correlations of .76 and .80, respectively with these child measures when they used predictors such as quality of maternal language, amount of reading and conversation opportunity for the child to learn new words, and cultural level of home discussions" (Honig, 1979, p.9).

Findings in this study suggest that <u>process</u> (or interaction) variables for mothers, and <u>status</u> (or demographic) variables for

fathers, may be differentially important in the promotion of toddler language development.

Conclusions

Culture group membership *per se* did not turn out to be as important in this study as did family and child relationships and personal parental attitude toward family life. Where parent educational status was higher, and where there was more of an optimistic parental feeling toward family life, as well as a more positive relationship between parent and child, then toddler language status was significantly more likely to be normal rather than delayed or retarded. These relationships were more salient for mothers than for fathers in each culture.

This study suggests that society needs to make strenuous efforts at: 1) improving the educational level attained by parents, 2)improving the ambience of family life so that overly stressful situations and attitudes are diminished, and 3) teaching parenting skills and child development so that parents can have insights and information in order to build more positive relationships with their young children. Such outreach parenting educational efforts, regardless of cultural milieu, may then well have the added bonus not only of improving social-emotional relationships within families, but also of increasing the quality and degree of language development among toddlers by the end of the second year of life.

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Table 1

Toddler language status and child behavioral problems for three culture groups

Language status	Child behavioral problem[a]								
	French			North African[b]			African		
	no problem	minor problem	major problem	no problem	minor problem	major problem	no problem	minor problem	major problem
optimal	62	26	12	68	20	27	23	8	10
delayed/ retarded	23	14	11	28	24	24	14	3	6

[a] $\chi^2(2)=9.21$, $p=.01$. This analysis was done across all three culture groups.
[b] $\chi^2(2)=9.65$, $p=.008$.

Raw frequencies are given for each cell.

Table 2

Toddler language status and IQ for three culture groups

Language status	IQ[a]					
	French[b]		North African[c]		African[d]	
	<=99	>=100	<=99	>=100	<=99	>=100
optimal	14	77	16	81	7	30
delayed	1	8	3	9	3	1
retarded	14	19	23	16	11	3

[a] $\chi^2(2)=48.51$, $p=.000$. Three culture groups were combined for the overall analyis.
[b] $\chi^2(2)=11.03$, $p=.004$. [c] $\chi^2(2)=24.77$, $p=.000$. [d] $\chi^2(2)=17.79$, $p=.000$.

Raw frequencies are given for each cell.

Table 3

Toddler language status and sex of child
for three culture groups

Language status	Sex					
	French[a]		North African		African[b]	
	boys	girls	boys	girls	boys	girls
optimal	49	51	64	51	17	24
delayed	3	7	9	6	4	0
retarded	27	11	28	33	15	4

[a] $\chi^2(2)=7.74$, $p=.02$
[b] $\chi^2(2)=10.73$, $p=.005$.

Raw frequencies are given for each cell.

Table 4

Toddler language status and
Socio-Economic Status for three culture groups

Language Status	SES					
	French[a]		North African		African	
	low	middle	low	middle	low	middle
optimal	69	31	115	0	25	16
delayed	3	7	15	0	3	1
retarded	29	9	61	0	12	7

[a] $\chi^2(2)=7.92$, $p=.02$.

Raw frequencies are given for each cell.

Table 5

Toddler language status and
maternal educational level for three culture groups

Language Status	Maternal Education[a]								
	French			North African			African		
	college	high school	<high school	college	high school	<high school	college	high school	<high school
optimal	31	27	42	4	9	102	6	12	23
delayed	6	1	3	2	0	13	1	0	3
retarded	8	8	22	2	2	57	4	8	7

[a] $X^2(4)=9.97$, $p=.04$. This analysis was done across all three culture groups.

Raw frequencies are given for each cell.

Table 6

Toddler language status and
paternal education for three culture groups

Language status	Paternal education[a]								
	French			North African			African		
	college	high school	<high school	college	high school	<high school	college	high school	<high school
optimal	49	18	33	6	5	104	20	5	16
delayed	7	0	3	2	1	12	1	0	3
retarded	11	7	20	1	3	57	7	5	7

[a]$\chi^2_{(4)}=9.86$, $p=.04$. The overall analysis was done across all three culture groups. Raw frequencies are given for each cell.

Table 7

Toddler language status and maternal stress
for three culture groups

Language status	Maternal stress[a]								
	French			North African[b]			African[c]		
	no stress	mild distress	over-whelmed	no stress	mild distress	over-whelmed	no stress	mild distress	over-whelmed
optimal	51	34	15	45	44	26	16	17	8
delayed/ retarded	18	18	12	17	39	20	1	14	8

[a] $\chi^2(2)=15.03$, $p=.001$. The overall analysis was done across all three culture groups.
[b] $\chi^2(2)=6.02$, $p=.05$. [c] $\chi^2(2)=9.19$, $p=.01$.

Raw frequencies are given for each cell.

Table 8

Toddler language status and paternal stress
for three culture groups

Language status	Paternal stress[a]								
	French			North African[b]			African		
	no stress	mild distress	over-whelmed	no stress	mild distress	over-whelmed	no stress	mild distress	over-whelmed
optimal	38	58	4	42	67	6	16	24	1
delayed/ retarded	20	25	3	14	54	8	4	15	4

[a] $\chi^2(2)=9.37$, $p=.01$. Three culture groups were combined for the overall analysis.
[b] $\chi^2(2)=8.06$, $p=.02$.

Raw frequencies are given for each cell.

Table 9

Toddler language status and mother-child relationship for three culture groups

Language status	Mother-child relationship[a]								
	French[b]			North African[c]			African[d]		
	optimal	fair	poor	optimal	fair	poor	optimal	fair	poor
optimal	53	37	10	49	47	19	16	21	4
delayed/ retarded	18	20	10	18	44	14	1	15	7

[a] $\chi^2(2)=17.89$, $p=.000$. Three culture groups were combined for the overall analysis.
[b] $\chi^2(2)=4.62$, $p=.10$. [c] $\chi^2(2)=7.55$, $p=.02$. [d] $\chi^2(2)=10.85$, $p=.01$.

Raw frequencies are given for each cell.

Table 10

Toddler language status and father-child relationship for three culture groups

Language status	Father-child relationship[a]								
	French			North African[b]			African		
	optimal	fair	poor	optimal	fair	poor	optimal	fair	poor
optimal	39	59	2	42	68	5	15	25	1
delayed/ retarded	20	27	1	17	57	2	5	15	3

[a] $\chi^2(2)=3.37$, n.s. Three culture groups were combined for the overall analysis.
[b] $\chi^2(2)=5.10$, $p=.08$.

Raw frequencies are given for each cell.

Table 11

Mean toddler language score as a function of maternal educational level and mother-child relationship

Maternal education	Mother-child relationship[a]		
	optimal	neutral	poor
high school graduate or more	2.63	2.38	2.14
less than high school graduate	2.56	2.17	2.10

[a] $F=7.49$, $p=.000$

Table 12

Mean toddler language score as a function of paternal educational level and father-child relationship

Paternal education	Father-child relationship[a]		
	optimal	neutral	poor
high school graduate or more	2.63	2.39	2.33
less than high school graduate	2.33	2.25	2.09

[a] $F=3.14$, $p=.03$

Table 13

Mean toddler language score as a function of maternal educational level and stress

Maternal education	Mother's feeling of stress[a]		
	no stress	mild distress	high stress
high school graduate or more	2.63	2.38	2.25
less than high school graduate	2.55	2.20	2.12

[a]F=6.61, F=.000

Table 14

Mean toddler language score as a function of paternal educational level and stress

Paternal education	Father's feeling of stress[a]		
	no stress	mild distress	high stress
high school graduate or more	2.64	2.41	2.00
less than high school graduate	2.40	2.27	1.85

[a] $F=5.87$, $p=.000$